Title of Instructional Materials: McGraw-Hill Glencoe Alg I

Grade Level: Algebra I

Summary of McGraw-Hill Glencoe Algebra I

Overall Rating: ☒ Weak (1-2) ☐ Moderate (2-3) ☐ Strong (3-4) **Summary / Justification / Evidence:** This text is a very unbalanced approach with emphasis on skills and procedures with little or no context or mathematical relationships.	Important Mathematical Ideas: ☒ Weak (1-2) ☐ Moderate (2-3) ☐ Strong (3-4) **Summary / Justification / Evidence:** Mathematical ideas are approached primarly from a skill level with little connection to context or big ideas within the lessons (ie p. 129) Many of the new standards are taught as "Extensions" or add-ons and not integrated within the lesson (ie Extend 3.2).
Skills and Procedures: ☒ Weak (1-2) ☐ Moderate (2-3) ☐ Strong (3-4) **Summary / Justification / Evidence:** Skills and procedures are taught without conceptual understanding and rather taught as single entities used to solve a problem with specific step-by-step procedures and are practice throughd rote drill and skill (ie Lesson 2-1 through 2-5).	Mathematical Relationships: ☒ Weak (1-2) ☐ Moderate (2-3) ☐ Strong (3-4) **Summary / Justification / Evidence:** The skills throughout the text are taught as discrete ideas and skills without evidence of bigger ideas and relationships. Most of the student problems are without context and just include drilled practice.

McGraw-Hill Glencoe I
↳ good overall

INDIANA'S EDUCATION ROUNDTABLE 2010

Instructional Materials Analysis and Selection

Phase 3: Assessing Content Alignment to the Common Core State Standards for Mathematics

Traditional Pathway for High School: Algebra I

a project of
The Charles A. Dana Center
at the University of Texas at Austin

Instructional Materials Analysis and Selection

Phase 3:

Assessing Content Alignment to the Common Core State Standards for Mathematics

A project of

The Indiana Education Roundtable, The Indiana Department of Education,

and

The Charles A. Dana Center at The University of Texas at Austin

2010–2011

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Creating Equations (A-CED)

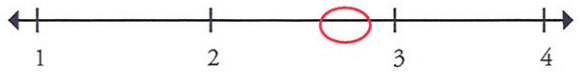
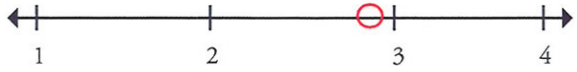
Create equations that describe numbers or relationships.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Note: Linear, quadratic, and exponential (integer inputs only). **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Extend 1.7, 3.1, 3.4, 3.5, 3.6, 4.1, 4.2, 4.3, 4.4., 4.5, 4.6, 4.7, 6.1, Extend 6.1, 6.2, 6.3, 6.4, 6.5, 7.5, 7.6, 8.6, 8.7, 8.8, 9.1, 9.2, 9.4, 9.5, 10.1, Extend 10.1, 10.4, 11.2, 11.8	Important Mathematical Ideas 1 2 3 4 Skills and Procedures 1 2 3 4 Mathematical Relationships 1 2 3 4 **Summary / Justification / Evidence** **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 1 2 3 4

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Creating Equations (A-CED)

Create equations that describe numbers or relationships.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-CED.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.** Note: Linear, quadratic, and exponential (integer inputs only). **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.9 3.2, 5.1, 5.2, 5.3, 5.4, 5.5	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** Does a nice job of setting up linear equations and inequalities though. **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Did not cover creating equations or inequalities that were quadratic or exponential. Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Arithmetic with Polynomials and Rational Expressions (A-APR)

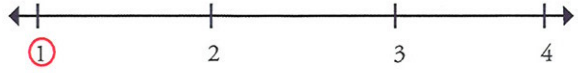
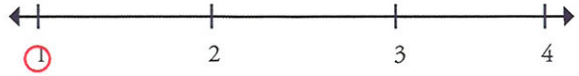
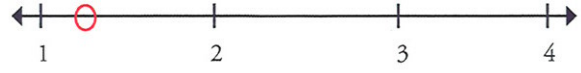
Perform arithmetic operations on polynomials.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. Note: Linear and quadratic. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Explore 8.1 8.1 8.2 Explore 8.3 8.3 8.4	Important Mathematical Ideas 1 2 3 4 Skills and Procedures 1 2 3 4 Mathematical Relationships 1 2 3 4 **Summary / Justification / Evidence** **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 1 2 3 4

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

Write expressions in equivalent forms to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.3c 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.* Note: Quadratic and exponential. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Extend 7.6	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Presented as an Algebra Lab extension of 7.6 No real practice. Quadratic expressions are not touched upon. Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

Write expressions in equivalent forms to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.3b 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. Note: Quadratic and exponential. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 9.3 9.4 Extend 9.4	Important Mathematical Ideas 1 2 (3) 4 Skills and Procedures 1 2 (3) 4 Mathematical Relationships 1 2 (3) 4 **Summary / Justification / Evidence** **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Max and Min is taught as an afterthought in the Extend section of 9.4. Better if this was included as part of the lesson due to its importance in the standards. Overall Rating 1 2 (3) 4

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

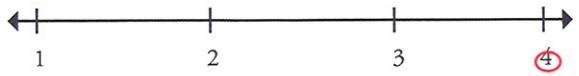
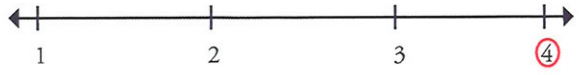
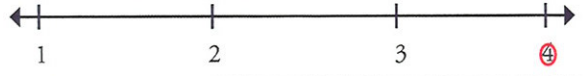
Write expressions in equivalent forms to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.3a 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. Note: Quadratic and exponential. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 8.5 8.6 8.7 8.8 8.9	Important Mathematical Ideas 1 2 3 (4) Skills and Procedures 1 2 3 (4) Mathematical Relationships 1 2 3 (4) **Summary / Justification / Evidence** Well done... **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 1 2 3 (4)

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

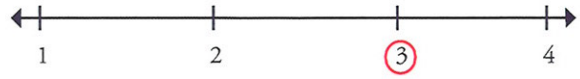
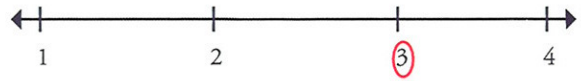
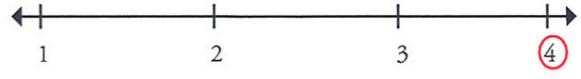
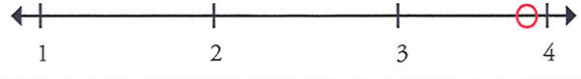
Interpret the structure of expressions.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.2 Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.* Note: Linear, exponential, quadratic.	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** The book does a nice job of covering this standard and progressively covers more as new concepts and skills arise.
Indicate the chapter(s), section(s), and/or page(s) reviewed. 1.1 1.2 1.3 1.4 7.1 7.2 7.3 7.4 Explore 8.5 8.5 Explore 8.6 8.6 8.7 8.8 8.9 The company did not include, but I believe Ch. 9 meets this as well.	**Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):**
	Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

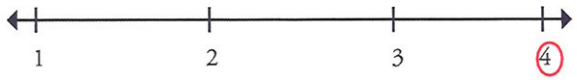
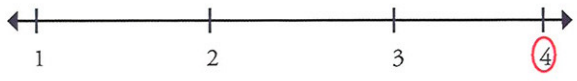
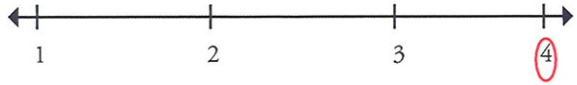
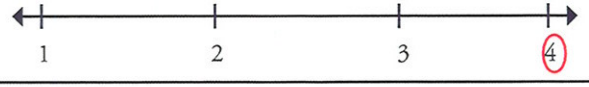
Interpret the structure of expressions.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.1b 1. Interpret expressions that represent a quantity in terms of its context.* b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.* Note: Linear, exponential, quadratic. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 1.2 1.3 9.7	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** Teaches Order of Ops, Properties, and Growth and decay. Also includes "literal equations" and requires solving/ interpreting for different variables within the equation. **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — ALGEBRA (A)

Seeing Structure in Expressions (A-SSE)

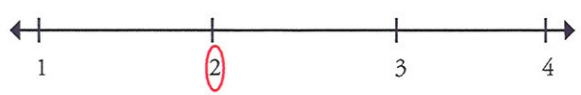
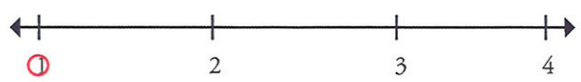
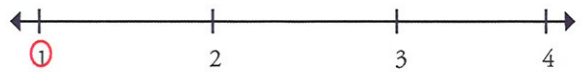
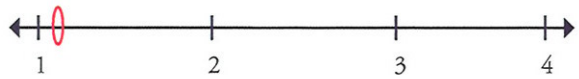
Interpret the structure of expressions.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
A-SSE.1a 1. Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. Note: Linear, exponential, quadratic. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 1.1 1.4 small bit in 8.1 small bit in 9.1	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** Gives a good foundation that is built on with new ideas and concepts... **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — NUMBER AND QUANTITY (N)

Quantities (N-Q)

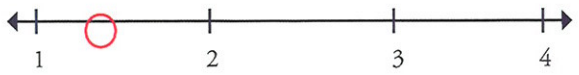
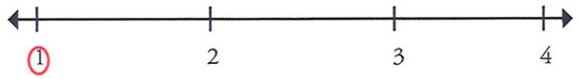
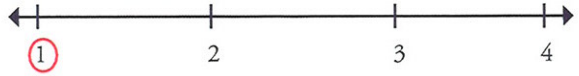
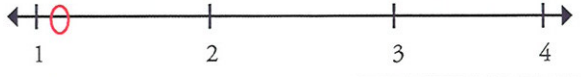
Reason quantitatively and use units to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.* Note: Foundation for work with expressions, equations and functions. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Extend 1.3	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** This is taught as an after-thought in the extension section and is not connected to real life or really given specifics, just many examples. Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — NUMBER AND QUANTITY (N)

Quantities (N-Q)

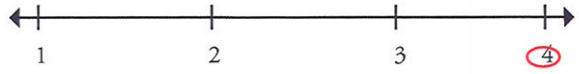
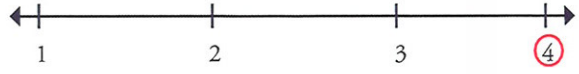
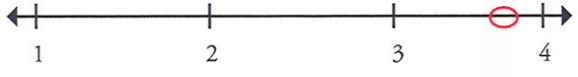
Reason quantitatively and use units to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-Q.2 Define appropriate quantities for the purpose of descriptive modeling.* Note: Foundation for work with expressions, equations and functions. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Extend 2.6	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence**
	Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any): Descriptive modeling is taught as a spreadsheet lab. This doesn't really build the foundation for work with expressions, equations, and functions unless the teacher ties them together.
	Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — NUMBER AND QUANTITY (N)

Quantities (N-Q)

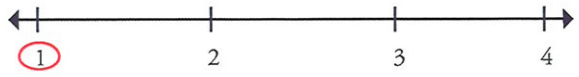
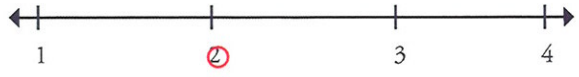
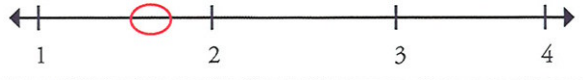
Reason quantitatively and use units to solve problems.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.* Note: Foundation for work with expressions, equations and functions. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Covered throughout text; 2.6, 2.7, 2.8, 2.9, Extend 3.2, 4.5, 7.5	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** Although not taught as a seperate concept, this is covered quite a bit in chapter 2 and appropriately throughout the text. **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — NUMBER AND QUANTITY (N)

The Real Number System (N-RN)

Use properties of rational and irrational numbers.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-RN.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** Extend 10.2	Important Mathematical Ideas  Skills and Procedures  Mathematical Relationships  **Summary / Justification / Evidence** This standard is taught as an "after-thought" in the extend section. There is little to no practice and connections. **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 

Reviewed By: _____

Title of Instructional Materials: _____

ALGEBRA I — NUMBER AND QUANTITY (N)

The Real Number System (N-RN)

Extend the properties of exponents to rational exponents.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-RN.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents. **Indicate the chapter(s), section(s), and/or page(s) reviewed.** 7.3 Scientific Notation 10.2 Graphing Tech. Lab about Rational Exponents 10.3 Operations with Rational Expressions Extend 10.3 Simplify nth Root Expressions 10.4 Radical Equations	Important Mathematical Ideas 1 2 3 (4) Skills and Procedures 1 2 3 (4) Mathematical Relationships 1 2 3 (4) **Summary / Justification / Evidence** Covered extremely well... **Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):** Overall Rating 1 2 3 (4)

Reviewed By: [redacted]

Title of Instructional Materials: McGraw-Hill Glencoe Alg I

ALGEBRA I — NUMBER AND QUANTITY (N)

The Real Number System (N-RN)

Extend the properties of exponents to rational exponents.	**Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.**
N-RN.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(51/3)3 = 5(^{1/3})^3$ to hold, so $(5^{1/3})^3$ must equal 5.*	Important Mathematical Ideas 1 — (2) — 3 — 4 Skills and Procedures 1 — (2) — 3 — 4 Mathematical Relationships 1 — (2) — 3 — 4 **Summary / Justification / Evidence** Taught as a side-item with a graphing technology lab
Indicate the chapter(s), section(s), and/or page(s) reviewed. p. 618 - Taught as a Graphing Technology Lab (Disagree with note that this is covered in 7-3 where Scientific Notation is taught.)	**Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):**
	Overall Rating 1 — (2) — 3 — 4

Reviewed By: _____

Title of Instructional Materials: _____

Documenting Alignment to the Standards for Mathematical Practice

8. Look for and express regularity in repeated reasoning.

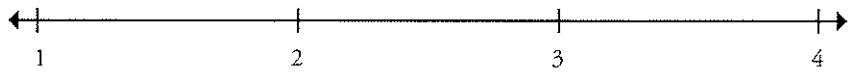
Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: [redacted]

Title of Instructional Materials: Glencoe / McGraw-Hill

Documenting Alignment to the Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating

Reviewed By: _____

Title of Instructional Materials: _____

Documenting Alignment to the Standards for Mathematical Practice

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating

CONTENT STANDARDS RUBRIC
Algebra 1

The Real Number System N -RN

Extend the properties of exponents to rational exponents.

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define 51/3 to be the cube root of 5 because we want (51/3)3 = 5(1/3)3 to hold, so (51/3)3 must equal 5.* p. 618

2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. p. 618

Use properties of rational and irrational numbers.

3. Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas 1	Are ideas conceptually developed (4) or approached from a simple skill level (1)? 4 3 2 **1**	Are ideas expanded to other math ideas (4) or developed independently of each other (1)? 4 3 2 **1**	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)? 4 3 2 **1**	p.618 rational exp from table pattern w/o Trace
Skills and Procedures 1	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)? 4 3 **2** 1	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)? 4 3 2 **1**	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)? 4 3 2 **1**	slight connection to properties of exponents
Mathematical Relationships 1	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)? 4 **3** 2 1	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)? 4 3 2 **1**	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)? 4 3 2 **1**	

Missing or weak content from this standard RN3?

Overall for this Standard: 1

CONTENT STANDARDS RUBRIC
Algebra 1

Quantities N -Q

Reason quantitatively and use units to solve problems. (Foundation work with expressions, equations, and functions)

1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	p126 unit conversion & dimensional analysis
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Missing or weak content from this standard	Q 1, 2, 3 ?			

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC
Algebra 1

Seeing Structure in Expressions A-SSE

Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its context.

a. Interpret parts of an expression, such as terms, factors, and coefficients.

b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example interpret P(1+r) as the product of P and a factor not depending on P.*

2. Use the structure of an expression to identify ways to rewrite it. *For example, see $x_4 - y_4$ as $(x_2)_2 - (y_2)_2$, thus recognizing it as a difference of squares that can be factored as $(x_2 - y_2)(x_2 + y_2)$.*

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. ⋆

a. Factor a quadratic expression to reveal the zeros of the function it defines.

b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

c. Use the properties of exponents to transform expressions forexponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1 ✓	4 3 2 ✓ 1	4 3 2 1 ✓	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	Factoring - Sec 4.9 also 4.9, 5.5 No area model
	4 3 2 1 ✓	4 3 2 1 ✓	4 3 2 1 ✓	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	quadratic factors to zeros
	4 3 2 1 ✓	4 3 2 1 ✓	4 3 2 1 ✓	

Missing or weak content from this standard: SE-1 Context missing p. 5-8
3b Complete square to find max or min

Overall for this Standard: 1

CONTENT STANDARDS RUBRIC
Algebra 1

Arithmetic with Polynomials and Rational Expressions A -APR

Perform arithmetic operations on polynomials

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction,and multiplication; add, subtract, and multiply polynomials.

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard APR-1

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC
Algebra 1

Creating Equations A -CED

Create equations that describe numbers or relationships

1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.* p.129

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	p.129 no connection to context or big ideas Solve equations 81-85, 87-117 odd create p.125-129, 113 progression
	4 3 2 1 X	4 3 2 1 X	4 3 2 1 X	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	p.119 step by step do change p.123-124 ab value equations
	4 3 2 1 X	4 3 2 1 X	4 3 2 1 X	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	p.112-113 progressions do not include to solving equations by prop of equality mean/extreme/fewer included
	4 3 2 X	4 3 2 1 X	4 3 2 1 X	

Missing or weak content from this standard

equations from functions ?

Overall for this Standard: 1

CONTENT STANDARDS RUBRIC

Algebra 1

Reasoning with Equations and Inequalities A -RE I

Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Solve equations and inequalities in one variable

3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
4. Solve quadratic equations in one variable.

a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)2 = q$ that has the same solutions. Derive the quadratic formula from this form.

b. Solve quadratic equations by inspection (e.g., for $x2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	See question page
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard

Overall for this Standard: 1

CONTENT STANDARDS RUBRIC
Algebra 1

Interpreting Functions F-IF

Understand the concept of a function and use function notation

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n+1) = f(n) + f(n-1)$ for $n \geq 1$.*

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard

Overall for this Standard: _____

11.4E-49 Functions about context

CONTENT STANDARDS RUBRIC
Algebra 1

Interpreting Functions F-IF

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*

5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*

6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard

Functions in context?

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC
Algebra 1

Interpreting Functions F-IF

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

a. Graph linear and quadratic functions and show intercepts, maxima, and minima.

b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

e. Graph exponential functions, showing intercepts and end behavior.

8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)t$, $y = (0.97)t$, $y = (1.01)12t$, $y = (1.2)t/10$, *and classify them as representing exponential growth or decay.*

9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC
Algebra 1

Building Functions F-BF

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.
a. Determine an explicit expression, a recursive process, or steps for calculation from a context.
b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*
c. (+) Compose functions. *For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.*
2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

	Development				Connections				Rigor and Depth				Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?				Are ideas expanded to other math ideas (4) or developed independently of each other (1)?				Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?				Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?				Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?				Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?				Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	

Missing or weak content from this standard

#2 pp. 189-191 write them to model (

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC
Algebra 1

Building Functions F-BF

Build new functions from existing functions

3. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*

4. Find inverse functions.

a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*

	Development	Connections	Rigor and Depth	Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?	Are ideas expanded to other math ideas (4) or developed independently of each other (1)?	Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?	Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?	Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?	Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?	Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?	
	4 3 2 1	4 3 2 1	4 3 2 1	

Missing or weak content from this standard inverse function

Overall for this Standard: _____

CONTENT STANDARDS RUBRIC

Algebra 1

Linear, Quadratic, and Exponential Models F -LE

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear or exponential function in terms of a context.

	Development				Connections				Rigor and Depth				Overall/Evidence
Mathematical Ideas	Are ideas conceptually developed (4) or approached from a simple skill level (1)?				Are ideas expanded to other math ideas (4) or developed independently of each other (1)?				Do ideas require extension of important ideas and the use of multiple approaches (4) or only using procedures and memorization (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	
Skills and Procedures	Are skills and procedures integrated with math ideas (4) or are they the primary focus of the lesson (1)?				Are skills and procedures connected to other ideas (4) or treated as isolated skills with no connection (1)?				Are skills and procedures critical to the application of other math ideas (4) or are they practiced without conceptual development (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	
Mathematical Relationships	Are math relationships evident to build understanding (4) or appear as a series of independent skills (1)?				Are relationships integrated with other math ideas (4) or are problems focusing on drill only(1)?				Do relationships require a broad use of math (4) or only require the use of skills and procedures (1)?				
	4	3	2	1	4	3	2	1	4	3	2	1	

Missing or weak content from this standard #3? #1 situation?

Overall for this Standard: _____